(PART NO. 9372906019-03)

INSTALLATION MANUAL
Wall Mounted Type Indoor Unit

For authorized service personnel only.

⚠ WARNING	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
• For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.	
• Connect the indoor unit and outdoor unit with the air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.	
• Installation work must be performed in accordance with national wiring standards by authorized personnel only.	
• If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.	
• Do not turn on the power until all installation work is complete.	

⚠ CAUTION	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.
• Never use piping which has been used for previous installation. Only use parts that are delivered with the unit.	
• If the humidity around refrigerant piping is high, condensation or water leak may occur. Therefore, be sure to carry out heat insulation process of gas and liquid piping. As for the insulating material, refer to the table below and use the material which provides enough heat insulating effect. (Reference) In case a heat insulating material which thermal conductivity is less than 0.045W / mk (at 20 °C) is used.	

Humidity around piping (%)	Recommended thickness of heat insulating material (mm)
~ 70	10
70 ~ 80	15
80 ~	20

- Be careful not to scratch the air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
- Let the customer keep this installation manual because it is used when the air conditioner is serviced or moved.

STANDARD PARTS

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Name and Shape	Q'ty	Name and Shape	Q'ty	Name and Shape	Q'ty
Wall hook bracket	1	Wire assembly	1	Remote controller	1	Remote controller holder	1
Tapping screw	Big 12 / Normal 4	EMI filter (ZCAT 1518-0730)	1	Tapping screw	Small 3	Battery	2

OPTIONAL PARTS

- EV KIT is necessary in "J SERIES". It can be purchased through the local dealer. (Make sure to use the right EV KIT as it differs depending on the indoor unit models.)
- Other optional controllers are also available. When purchasing, select in the catalog, etc. according to your purpose.

EV KIT	Wired remote controller	Simple remote controller	Central remote controller
AS18, AS24 : UTR-EV2 AS30 : UTR-EV3			

SELECTING THE MOUNTING POSITION

⚠ WARNING

- Install at a place that can withstand the weight of the indoor unit and install positively so that the unit will not topple or fall.

⚠ CAUTION

- Do not install where there is the danger of combustible gas leakage.
- Do not install near heat sources and the location with high temperature.
- If children under 10 years old may approach the unit, taken preventive measures so that they cannot reach the unit.

Decide the mounting position with the customer as follows:
(1) Install the indoor unit level on a strong wall, floor, ceiling which is not subject to vibration.
(2) Leave the space specified in Fig.1 so that the air from the blower will cover the entire room.
(3) Install the unit where the drain hose can be easily installed.
(4) Do not install the unit where it will be exposed to direct sunlight.

Choice of installation:
The piping can be connected in six directions indicated by ①, ②, ③, ④, ⑤ and ⑥ in Fig.2.

Fig. 1

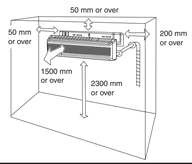
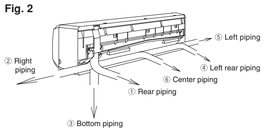


Fig. 2



INSTALLATION PROCEDURE

1. INDOOR UNIT INSTALLATION

1.1 INSTALLING THE WALL HOOK BRACKET

⚠ WARNING

- Install the wall hook bracket so that it is correctly positioned horizontally and vertically. If the wall hook bracket is tilted, water will drip to the floor.

Removing the wall hook bracket:
(1) Remove the hook inside the panel. (Fig.4)
(2) Pull off the wall hook bracket.

Installing to the wall: (Refer to Fig.3 for the installation hole dimension)
- Before fasting the wall hook bracket to the wall with the screws, level it by tapping the hook at the center of bracket to the wall with the handle of a screwdriver. (Fig.5)

(1) Fasten the wall hook bracket to the wall with 6 or more screws and anchor bolts through the holes near the outer edge of the bracket. (Do not install the wall hook bracket at only one place or at an angle.)
(2) For concrete wall, embed anchor bolts (10 mm dia.) into the wall at the wall hook bracket holes (11X43 mm hole and 11X94 mm hole). (Allow the anchor bolts to stick out at least 18 mm from the wall. Use 2 bolts for the concrete wall and 4 bolts for blister concrete wall.)
(3) Install the nuts to the anchor bolts through the wall hook bracket.

Fig. 3

Unit [mm]

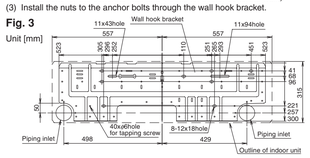


Fig. 4

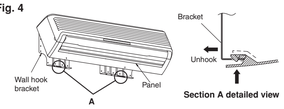
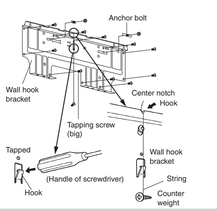


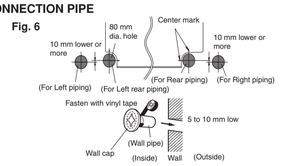
Fig. 5



1.2 CUTTING THE HOLE IN THE WALL FOR THE CONNECTION PIPE

(1) Cut a 80 mm diameter hole in the wall at the position shown in Fig.6.
(2) When cutting the wall hole at the inside of the installation frame, cut the hole within the range of the left and right center marks 40 mm below the wall hook bracket.
When cutting the wall hole at the outside of the installation frame, cut the hole at least 10 mm below.
(3) Cut the hole so that the outside end is lower (5 to 10 mm) than the inside end. (Always align the center of the wall hole. If misaligned, water leakage will occur.)

Fig. 6



1.3 ATTACH THE DRAIN HOSE

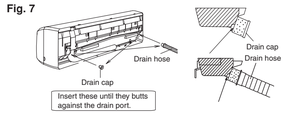
[For Rear piping, Right piping, Bottom piping]
- The drain hose and drain cap are used as they are.

[For Left rear piping, Left piping, Center piping]
- Remove the drain cap and drain hose. (Fig.7)
- Mount the drain cap and drain hose to the drain port on its opposite side.

⚠ CAUTION

- If the drain hose is not connected properly, leaking will occur.

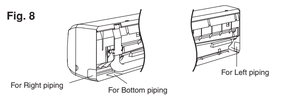
Fig. 7



1.4 CUT-OUT FOR PIPING ON FRONT COVER

[For Right piping, Bottom piping, Left piping]
- Use a metal shears or other cutting tool to cut along the groove for the piping that will coming out of the front cover.

Fig. 8



1.5 FORMING THE DRAIN HOSE AND PIPE

[For Rear piping, Right piping, Bottom piping]
- Install the indoor unit piping in the direction of the wall hole and bind the drain hose and pipe together with vinyl tape. (Fig.9)
- Install the piping so that the drain hose is at the bottom.
- Wrap the pipes of the indoor unit that are visible from the outside with cloth tape.

[For Left rear piping, Left piping]
- Shape the connection pipe. (Fig.10) (L= 380 / in case of "J SERIES", L= 90)
- Bend the connection pipe at a bent radius of 100 mm or more and install no more than 50 mm from the wall.

[For Center piping]
- Shape the connection pipe.

Fig. 9

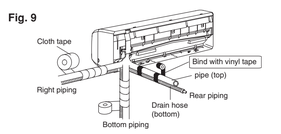
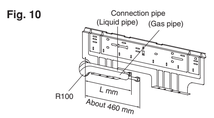


Fig. 10



1.6 EV KIT INSTALLATION ("J SERIES" ONLY)

- Connect the EV KIT to the liquid pipe. (Fig.11) (Make sure to connect it in the right direction.)
- In case of Center piping, cut the liquid pipe by 290 mm and set the flare nut supplied with the EV KIT onto the liquid pipe. (Fig.12) (Refer to 2. REFRIGERANT PIPE section) When installing the EV KIT, use the union supplied with the EV KIT.
- Wrap around the gas pipe with heat insulation (standard parts of EV KIT).
- Lead the EV KIT cord through the hole from behind.

Fig. 11 (Ex. Left piping)

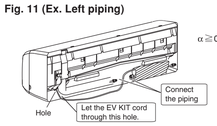
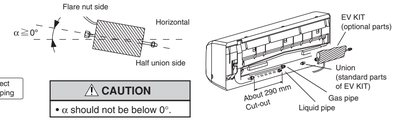


Fig. 12 (For Center piping)



⚠ CAUTION

- α should not be below 0°.

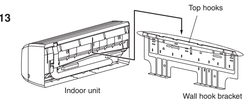
1.7 INSTALLING THE INDOOR UNIT

After passing the indoor piping and drain hose through the wall hole, hang the indoor unit on the hooks at the top and bottom of the wall hook bracket.

[For Left rear piping, Left piping, Center piping]
Choose the more efficient method of installation.
Method A : Floating the body method
Method B : Removing the panel method

- Piping work can be made easier by laying out, shaping and temporarily fasten the connection pipe and connection cable beforehand.

Fig. 13



Method A : Floating the body method
(1) Create the box from packing carton. (Fig.14)
(2) Insert this box between the indoor unit and the wall hook bracket.
(3) Mount the pipe and drain hose to the indoor unit. (Fig.15)
(4) Remove the box and hang the hook.

Fig. 14

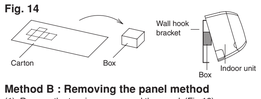
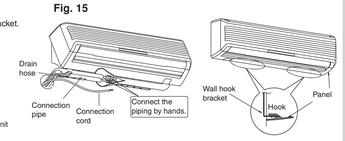
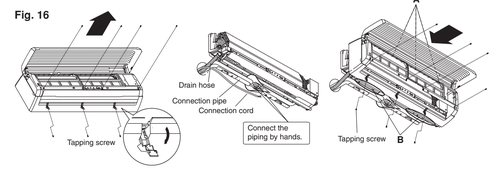


Fig. 15



Method B : Removing the panel method
(1) Remove the tapping screws and the panel. (Fig.16)
(2) Mount the pipe and drain hose to the indoor unit.
(3) Attach the hook and the panel.

Fig. 16



2. REFRIGERANT PIPE

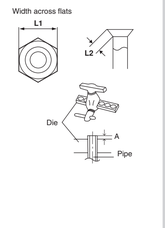
2.1 FLARE PROCESSING

(1) Cut the connection pipe with pipe cutters so that the pipe is not deformed.
(2) Holding the pipe downwards so that cutting cannot enter the pipe and remove the burrs.
(3) Remove the flare nut front the indoor unit pipe and assemble as shown in Table 1 and insert the flare nut onto the pipe, and flare with a flaring tool.
(4) Check if the flared part "L2" (Fig.17) is spread uniformly and that there are no crack.

Table 1

Pipe	L1	A: Flare tool for R410A, Clutch type	A: Flare tool for R22, Clutch type	A: Flare tool for R22, Wing nut type	Tightening Torque
φ6.35 mm	17 mm	0 to 0.5 mm	1.0 to 1.5 mm	1.5 to 2.0 mm	14.0 to 18.0 N·m
φ9.53 mm	22 mm	0 to 0.5 mm	1.0 to 1.5 mm	1.5 to 2.0 mm	33.0 to 42.0 N·m
φ12.7 mm	26 mm	0 to 0.5 mm	1.0 to 1.5 mm	2.0 to 2.5 mm	50.0 to 62.0 N·m
φ15.88 mm	29 mm	0 to 0.5 mm	1.0 to 1.5 mm	2.0 to 2.5 mm	63.0 to 77.0 N·m

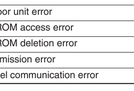
Fig. 17



2.2 CONNECTION PIPES

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench. (Fig.18, Table 1)

Fig. 18



⚠ CAUTION

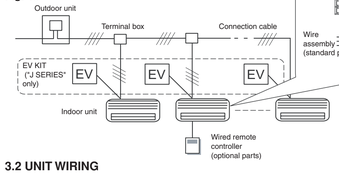
• Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tighten smoothly. If the flare nut is forced to turn, the threads will be damaged.
• Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.
• Hold the torque wrench at the grip, keeping it in the right angle with the pipes as shown in Fig.18, in order to tighten the flare nut correctly.
• When brazing the pipes, be sure to blow dry nitrogen gas through them. If the connection pipes are brazed without blow dry of nitrogen gas, it may cause malfunctions such as cooling error or damage to the parts (compressor, valves, etc.) inside the unit.
• In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

3. WIRING

3.1 WIRING METHOD

Wiring example for the indoor unit is shown in Fig.19.
If the total length of the connection cable exceeds 100 m, keep the length of the connection cable for the indoor units more than 5 m.

Fig. 19



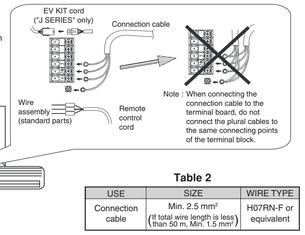

EV KIT cord ("J SERIES" only)
Connection cable
Wire assembly (standard parts)
Remote control cord
Note : When connecting the connection cable to the terminal board, do not connect the plural cables to the same connecting points of the terminal block.

Table 2

USE	SIZE	WIRE TYPE
Connection cable	Min. 2.5 mm² (If total wire length is less than 50 m, Min. 1.5 mm²)	H07RN-F or equivalent

3.2 UNIT WIRING

⚠ WARNING

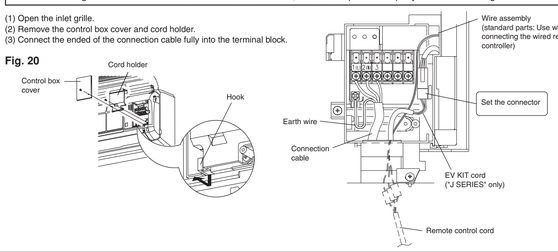
- Before starting work, check that power is not being supplied to the indoor unit.
- Connect the connection cable firmly to the terminal board. Imperfect installation may cause a fire.
- Always connect the ground wire.
- The terminal board numbers should be the same among the indoor units. Also, match the terminal board numbers of the indoor unit with those of the outdoor unit.

⚠ CAUTION

- The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
- When the voltage is low and the air conditioner is difficult to start, contact the power company to raise the voltage.

(1) Open the inlet grille.
(2) Remove the control box cover and cord holder.
(3) Connect the ended of the connection cable fully into the terminal block.

Fig. 20



[For connecting the wired / simple remote controller] (optional parts)
(1) Remove the panel according to Fig.16.
(2) Open the control box cover.
(3) Connect the wire assembly and the remote control cord by a connector.
(4) Set the EMI filter on the wire assembly and let go the wire assembly through the EMI filter as shown in the Fig.22.
(5) Connect the wire assembly (standard parts) to CN13 on the PC board.

Fig. 21

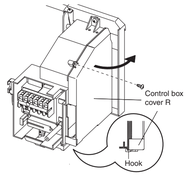
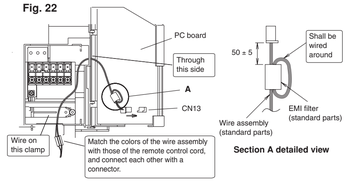


Fig. 22


PC board
Through this side
A
CN13
Wire on this clamp
Match the colors of the wire assembly with those of the remote control cord, and connect each other with a connector.
50 ± 5
Shall be wired around
Wire assembly (standard parts)
EMI filter (standard parts)
Section A detailed view

4. CUSTOM CODE SETTING FOR INDOOR UNIT

When changing the custom code, follow the instruction below.
Selecting the custom code prevents the indoor unit mix-up. (Fig.23)
(Up to 4 codes can be set)

(1) Open the control box cover. (Fig.21)
(2) Set the DIP - SW 5-1, 5-2, referring to the Table 3.

Fig. 23

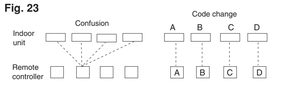


Fig. 24

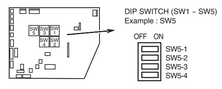


Table 3

	Custom code			
	A (Primary setting)	B	C	D
DIP SW 5 - 1	OFF	ON	OFF	ON
DIP SW 5 - 2	OFF	OFF	ON	ON

NOTE
It is also necessary to set up the custom code for the corresponding remote controller. (Refer to Section 7)

5. FINISHING

Before perform this section, perform a sealing test. (Refer to the INSTALLATION MANUAL of the outdoor unit.)

⚠ WARNING

Make sure that the pipe is covered completely by the insulation, not exposing to air. Inadequate heat insulation may cause condensation.

(1) Overlap the heat insulation of indoor unit pipe and connection pipe. (Fig.25) (In case of "J SERIES", insulate the EV KIT connecting part. When the EV KIT is placed inside wall, put all the six heat insulating seals around the EV KIT, and fix with the two binders.) (Fig.26)
(2) Bind easily the connection cable along the connection pipe with vinyl tape.
(3) Fasten the connection pipe to the outside wall with a saddle, etc.
(4) Fill the gap between the outside wall pipe hole and the pipe with seals so that rain or wind cannot blow in.
(5) Fasten the drain hose to the outside wall, etc.

Fig. 25

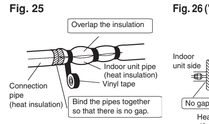

Overlap the insulation
Indoor unit pipe (heat insulation)
Vinyl tape
Connection pipe (heat insulation)
Bind the pipes together so that there is no gap.

Fig. 26 ("J SERIES" only)

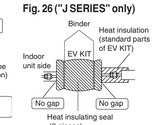


Fig. 27

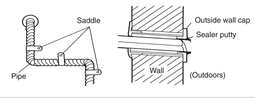
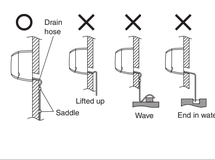


Fig. 28



6. ADDRESS SETTING

Address setting needs to be performed only for "J SERIES" (for the outdoor unit to distinguish each indoor unit from others).

Address setting procedure	
1	Switching to the address setting mode • Indoor unit (ⓒ Press and hold MANUAL AUTO for 3 sec.) OPERATION indicator lights up, and TIMER indicator blinks as many times as the value of the address data. (The initial address data is "00".) • Remote controller (ⓒ Press ACL while pressing FAN CONTROL and SET TEMP. (+).)
2	Selection and confirmation of custom code (refer to Fig.31, and Section 4 and 7) (If the custom code of the indoor unit has not been set up, proceed to step "3".) (a) Select the custom code set to the indoor unit setting (ⓒ Press SET TEMP. (+), (–).) (b) Send the code to the indoor unit (ⓒ Press VERTICAL AIR FLOW.) • CORRECT : PiPi (beeping sound from the indoor unit) • WRONG : No response
3	Address setting (refer to Fig.32) (a) Change in address setting mode (ⓒ Press MASTER CONTROL.) (b) Make sure the bottom number (Ⓐ part) is "01" (ⓒ Press SET TEMP.(+), (–).) (c) Switch the address data setting mode (ⓒ Press FAN CONTROL.) (d) Select the address (ⓒ Press SET TEMP. (+), (–) and MASTER CONTROL.) • Address should be within the range of "00" to "07". • Each indoor unit should have a different address. (e) Send the address data to the indoor unit (ⓒ Press START/STOP.) • Make sure the beeping sound (PiPiPi — PiPiPi — PiPiPi —) from the indoor unit is heard.
4	Check the address setting (ⓒ Press SLEEP.) • SUCCESS : PiPiPi — PiPiPiPiPi — (beeping sound from the indoor unit) • FAILURE : PiPiPi — — (3s) → return to step "3" (b) (ⓒ Press FAN CONTROL.)
5	Completion of address setting mode • Indoor unit (ⓒ Press and hold MANUAL AUTO for 3 sec.) • Remote controller (ⓒ Press ACL.)
6	Set up each indoor unit. (Repeat the step "1" to "5".) Reset the power after setting up address of all the indoor units. If the reset is not performed, address cannot be read in normally.

* Custom code of the remote controller is initialized by address setting. If necessary, set the custom code (refer to Section 7) after the address setting.

Fig. 29

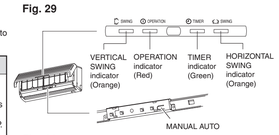


Fig. 30

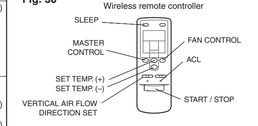


Fig. 31

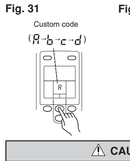
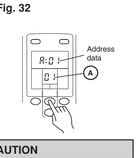


Fig. 32



⚠ CAUTION

Address setting needs to be performed correctly. If the address is conflicted, or set up to out of the setting range, the indoor units may not function correctly.

7. CUSTOM CODE SETTING FOR REMOTE CONTROLLER

If a custom code has been set up for the indoor unit, the same custom code needs to be set up for the corresponding remote controller.

1	2	3	4
ⓢSTART/STOP	MASTER CONTROL	+ –	MASTER CONTROL
Press until only the clock is displayed.	Press for more than 5 seconds to display the current custom code. (Initially set to R)	Change the custom code between R-b-c-d to match the code on the display to the air conditioner custom code.	Press again to return to the clock display.(The custom code will be changed.)

NOTES
(1) If no buttons are pressed within 30 seconds after the custom code is displayed, the system returns to the original clock display. In this case, start again from step 1.
(2) The remote controller resets to custom code A when the batteries in the remote controller are replaced. If you use a custom code other than custom code A, reset the custom code after replacing the batteries.
If you do not know the air conditioner custom code setting, try each of the custom codes (R-b-c-d) until you find the code which operates the air conditioner.

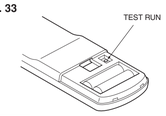
8. TEST RUN

TEST RUN USING CIRCUIT BOARD (OUTDOOR UNIT)
Refer to the INSTALLATION MANUAL of the outdoor unit if the circuit board for the outdoor unit is used for the test run.

TEST RUN USING REMOTE CONTROLLER
- Short two metallic pieces in the remote controller's test run frame while the indoor unit is running. (Fig.33)
- To stop the test run, push START/STOP button of the remote controller. (Fig.30)

When the air conditioner is being test run, the OPERATION and TIMER indicators flash slowly at the same time.

Fig. 33



CHECK ITEMS

Pay special attention to the check items below when installing the indoor unit(s).
After installation is complete, be sure to check the following check items again.

Table 4

CHECK ITEMS	If not performed correctly	CHECK BOX
Has the indoor unit been installed correctly?	Vibration, noise, indoor unit may drop	
Has there been a check for gas leaks (refrigerant pipes)?	No cooling	
Has heat insulation work been completed?	Water leakage	
Does water drain easily from the indoor units?	Water leakage	
Is the voltage of the power source the same as that indicated on the label on the indoor unit?	No operation, heat or burn damage	
Are the wires and pipes all connected completely?	No operation, heat or burn damage	
Is the indoor unit grounded?	Short circuit	
Is the connection cable the specified thickness?	No operation, heat or burn damage	
Are the inlets and outlets free of any obstacles?	No cooling	
After installation is completed, has the proper operation and handling been explained to the user?	_____	

ERROR DISPLAY

(1) Run the air conditioner in accordance with the OPERATING MANUAL.
(2) Operation can be checked by lighting and flashing of the OPERATION, TIMER and SWING indicators.
(3) Perform judgment in accordance with the following.

NORMAL DISPLAY	When the indoor unit is turned on	The OPERATION and TIMER indicators flash slowly alternatively.
	TEST RUN	The OPERATION and TIMER indicators flash slowly at the same time.
ERROR DISPLAY	The OPERATION, TIMER and SWING indicators operate as follows (Table 5) according to the error contents.	

Display Method ◇ : 0.1 sec. ON / 0.1 sec. OFF flashing
● : 0.5 sec. ON / 0.5 sec. OFF flashing
( ) : Flashing times

Table 5

Error display: OPERATION indicator	Error display: TIMER indicator	Error display: SWING indicator	Error code	Error content
_____	_____	_____	E:00	No error
◇	◇	_____	E:02	Model information abnormal
◇	◇	◇	E:04	Power supply frequency abnormal
● (2)	◇	_____	E:09	Room temperature thermistor error
● (3)	◇	● (1)	E:0b	Indoor unit heat exchanger thermistor (inlet) error
● (3)	◇	● (2)	E:0A	Indoor unit heat exchanger thermistor (middle) error
● (4)	◇	_____	E:11	Drain abnormal
● (5)	◇	● (1)	E:18	Communication error 1 (indoor unit ↔ wired / simple remote controller)
● (5)	◇	● (2)	E:03	Microcomputer error
● (5)	◇	● (4)	E:18	Communication error 2 (indoor unit ↔ wired / simple remote controller)
● (6)	◇	_____	E:13	Indoor unit fan error
◇	● (3)	● (3)	E:32	Outdoor unit error
◇	● (4)	● (1)	E:06	EEPROM access error
◇	● (4)	● (2)	E:07	EEPROM deletion error
◇	● (5)	● (1)	E:1F	Transmission error
◇	● (6)	_____	E:21	Parallel communication error